

# **Montana Airport Multimodal Study**

## **Part II Analysis and Recommendations**

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## ABSTRACT

The report uses information from a household survey and an airport manager's survey conducted by the University of Montana's Bureau of Business and Economic Research (UM/BBER) to: [a] conduct a multimodal activity analysis that identifies and defines airport multimodal activity in Montana, [b] conduct a multimodal methods and strategies analysis, including the presentation of recommendations on methods and strategies to enhance airport multimodal activity, and [c] conduct a multimodal efficiency analysis that evaluates the potential benefits resulting from increased multimodalism at Montana's airports.



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# MONTANA AIRPORT MULTIMODAL STUDY

## PART II ANALYSIS & RECOMMENDATIONS

### 1.0 INTRODUCTION

The stated purpose of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) is, *"to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the nation to compete in the global economy, and will move people and goods in an energy efficient manner."*

Multimodal transportation centers have existed throughout United States history. Train stations, airports and harbors have always provided travelers with some type of intermodal connection – whether it was for a horse drawn carriage, taxi, subway, private automobile, bus or limousine. These intermodal connections were seldom planned. They arose on a "catch as catch can" basis, primarily in response to some entrepreneur's perception of a profit making opportunity. By and large this system of market directed transportation linkages worked well, but occasionally travelers found themselves faced with cumbersome, inefficient arrangements. A business traveler might arrive in a city only to find he/she had to take a taxi from the hotel to the airport because that's where the only automobile rental agencies were located.

ISTEA signaled a shift in national transportation priorities: *"the need to obtain the optimum yield from existing resources, rather than relying solely on transportation expansion."* (Huerta, 1994, iii). It explicitly recognized that improvements in any single transportation mode would likely have implications for other modes, and it required that (a) the full range of transportation alternatives be considered concurrently, and (b) such planning reflect the connection between transportation and the environment. In effect, *"the competing demands for greater mobility and environment protection must be met by planning, management, and maintenance rather than simply, as in the past, physical expansion."* (Huerta, 1994, ii).

The University of Montana's Bureau of Business and Economic Research (UMBBER) conducted an airport multimodal transportation study which included (a) interviews with Montana airport managers to obtain their opinions about issues they thought important for multimodal planning, and (b) telephone interviews with 1,225 Montana residents about activities and opinions concerning commercial aviation, general aviation, aviation planning, multimodal aspects, and related issues. This report uses the survey information collected by UMBBER to:

- conduct a multimodal activity analysis which identifies and defines airport multimodal activity in Montana,
- conduct a multimodal methods and strategies analysis, including the presentation of recommendations on methods and strategies to enhance multimodal activity at airports, and
- conduct a multimodal efficiency analysis which evaluates the potential benefits that would result from increased multimodalism at Montana airports.

## **2.0 MULTIMODAL ACTIVITY ANALYSIS**

This section presents a multimodal activity analysis which identifies and defines airport multimodal activity in Montana.

### **2.1 USERS OF AVIATION TRANSPORTATION**

An estimated 22.1 percent of Montana's adult population used air transportation services during the past year (Table 1). It appears that the majority of Montana residents use air transportation, primarily for out of state trips since 21 percent reported using air transportation but only 4.9 percent used air transportation while making a trip within Montana of 100 miles or more during 1994. (UMBBER, Household Survey, 1995).

The characteristics of Montana residents who used air transportation services during 1994 are shown in Table 2. Air transportation users tended to be upper income (45 percent over \$35,000 annual income) and well educated (38 percent college graduates). One out of every five (20 percent) of Montana residents who traveled by air during 1994 was retired.

**Table 1**  
**Distribution of Montana's Population**  
**By Use of Airport Facilities & Services**

Airport Non-Users	21.0%		
Airport Users	79.0%		
Travelers		22.1%	
Urban			18.1%
Rural			4.0%
Other Airport Users (Non-Travelers)		56.9%	
Urban			31.6%
Rural			25.3%

Source: UM/BBER Household Survey, 1995

**Table 2**  
**Characteristics of Resident Air Service Users**

	Percent of Adult Population
<b>Age</b>	
18-24 yrs	5.6%
25-34 yrs	20.0%
35-44 yrs	20.9%
45-64 yrs	31.2%
65 + years	22.2%
<b>Gender</b>	
male	48.5%
female	51.9%
<b>Income</b>	
below \$15,000	18.9%
\$15-\$34,999	36.1%
over \$35,000	45.0%
<b>Education</b>	
some high school	4.4%
grad high school	36.6%
some college	21.7%
grad college	37.6%
<b>Employment Status</b>	
employed	69.4%
retired	20.0%
other	10.6%

Source: Thomas / Lane & Associates (TLA), from  
 UM/BBER Household Survey (1995)

The UMDBER survey asked airport users about their frequency of use. The final response category was "four or more times" – a response selected by about 30 percent of all airport users. Assuming – based on discussions with UMDBER's survey manager – the mean value for this response category was a frequency of six times a year and that air transportation service users had the same trip frequency as all airport users, Montana residents accounted for about 505 thousand (or 52 percent) of total enplanements at the state's seven commercial service airports during 1994.

## 2.2 INTRA-STATE AVIATION TRANSPORTATION PATTERNS

The estimated number of total origins/destinations (O/Ds) at five of Montana's commercial airports are presented in Table 3 (Landrum & Brown, 1992)) and provide further support for the conclusion that most Montana residents use air transportation for trips out of state while using surface transportation – primarily their own automobile –for in-state travel.

**Table 3**  
**Percent of In-State O/Ds at Selected**  
**Montana Airports: 1991**

Missoula	6.4%
Billings	11.0%
Bozeman	< 1.0%
Great Falls	0.7%
Kalispell	4.8%

Source: Landrum & Brown, 1992

The pattern of intra-state operations between the seven commercial airports in Montana is shown in Table 4. Billings has the most direct intra-state flights (i.e., flights between city pairs where the traveler does not have to change airplanes) with 18 outbound flights and 16 inbound flights, Helena has the next most with 10 inbound and outbound flights each. Bozeman has the fewest direct intra-state flights with two outbound and three inbound flights.

**Table 4**  
**Direct Flights Between Montana Commercial Airports**

FROM/TO	Billings	Bozeman	Butte	Great Falls	Helena	Glacier	Missoula	Total
Billings		1	3	4	4	3	1	16
Bozeman	1		0	0	0	1	1	3
Butte	4	0		0	3	0	0	7
Great Falls	4	0	0		2	0	1	7
Helena	4	0	4	2		0	0	10
Glacier	3	0	1	0	0		1	5
Missoula	2	1	0	1	1	2		7
Total	18	2	8	7	10	5	4	

Source: TLA, from Sabre Computer Reservation System (CRS) listings for the mid-week in August, 1995.

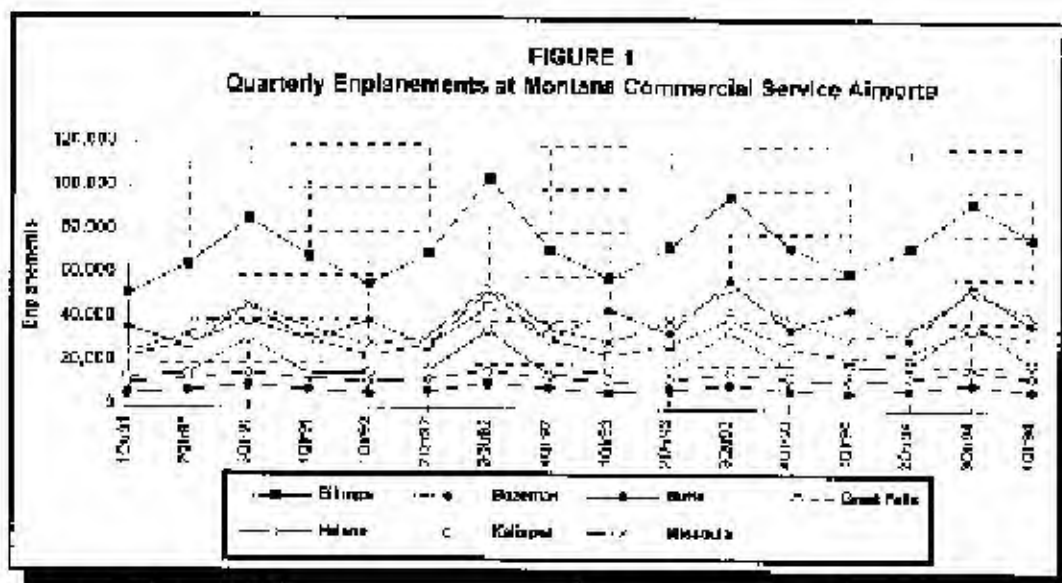
There are five essential air service (EAS) commercial airports in Montana with direct air service to Billings. The number of flights to/from Billings are shown in Table 5. Glasgow has three flights per day, and the other EAS cities have two flights a day.

**Table 5**  
**Direct Flights Between Billings and Montana EAS Commercial Airports**

FROM/TO	Billings	Glasgow	Glenndive	Lewistown	Sidney	Wolf Pt.	Total
Billings		3	2	2	2	2	11
Glasgow	3		0	0	0	0	3
Glenndive	2	0		0	0	0	2
Lewistown	2	0	0		0	0	2
Sidney	2	0	0	0		0	2
Wolf Point	2	0	0	0	0		2
Total	11	3	2	2	2	2	

Source: TLA, from Sabre CRS listings for the mid-week in August, 1995.

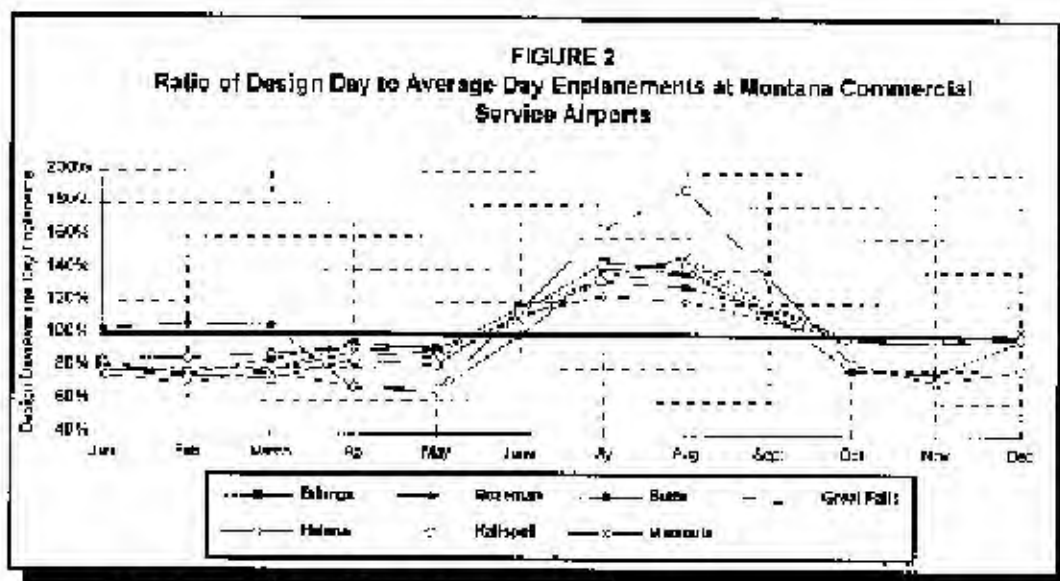
Enplanement trend data for Montana's seven commercial service airports for the years 1991 through 1994 were obtained from the Montana Airport Manager's Association (Graham, 1995) and are shown in Figure 1. (Graham, 1995).



Source: Graham, 1995

Billings shows the greatest number of enplanements and also exhibits a rising enplanement trend. Butte and Helena have the fewest enplanements and exhibit a generally flat trend. Bozeman, Kalispell and Missoula have moderately rising trends while Great Falls enplanements have exhibited a declining trend in recent years.

Figure 2 shows the seasonal pattern of Montana's seven commercial service airports - as measured by the ratio of design day to average day enplanements (ratios calculated by TLA from data provided by Graham, 1995). Kalispell exhibits the greatest relative seasonal peak in enplanements while Helena exhibits the smallest relative seasonal enplanement peak. July and August are the peak relative enplanement months for all of the airports. Bozeman and Kalispell have a relative seasonal enplanement trough in April and May, while the other five airports have relative seasonal enplanement troughs in January and February.



Source: TLA from data provided by Graham, 1995

Among Montana resident users of air transportation passenger services, 88 percent traveled by scheduled carrier, 4 percent used air taxi/commuter service, and 8 percent used a charter carrier (Table 6). Among all Montana residents (transportation service users, other airport users, and non-users) 2 percent participated in flight instruction, and 4 percent used both small package and air cargo services (Table 7).

**Table 6**  
**Types of Air Passenger Service Used By**  
**Montana Resident Travelers**

Scheduled Air Service	87.7%
Air Taxi/Commuter	3.9%
Air Charter	6.4%

Source: UM/BER Household Survey, 1995

**Table 7**  
**Airport Services Used By Montana Residents**  
**(excluding passenger service)**

<b>Cargo Movements</b>	
Small Freight	4.2%
Air Cargo	3.9%
<b>Other Airport Uses</b>	
Agricultural Service	2.0%
Emergency Medical	1.5%
Flight Instruction	2.2%
Aircraft Services	5.8%

Source: UM/BER Household Survey, 1995

### 2.3 MULTIMODAL AIRPORT TRAVELER LINKAGES

Twenty-two percent of Montana residents reported using some type of automobile related multimodal service at an airport (Table 8). The primary service used was airport parking (17 percent), with automobile rentals a distant second (5 percent). Travelers used automobile rental services slightly more frequently and airport parking slightly less frequently than all Montana residents who went to airports—reflecting the higher incidence of business transportation among travelers than the total population who go to airports to “see-off” or “pick-up” family members, pick-up/deliver small packages or air cargo, work on their own recreational aircraft or engage in other non-transportation related activities. This same pattern is shown in the transportation mode used by Montana residents to go to/from airports.

**Table 8**  
**Airport Automotive Multimodal Services Used By**  
**Montana Residents**

	% Population	% Travelers
Total Automotive	21.9%	21.8%
Auto Rental	4.9%	6.3%
Courtesy Car	0.1%	0.0%
Automobile Parking	16.8%	15.5%

Source: U/M/BBER Household Survey, 1995

Among potential transportation mode alternatives, private automotive transportation was the primary means used by Montana residents to get to/from airports in the state. Over ninety percent used their own cars while four percent or less used any other single transportation alternative (Table 9).

**Table 9**  
**Method of Transportation To Airport By Montana Residents**

	% Pop	% Travelers
Personal Automobile	91.4%	90.8%
Courtesy/Corporate Car	2.7%	2.6%
Taxi	0.8%	2.5%
Bus	0.4%	0.0%
Shuttle/Van	0.9%	0.7%
Other	3.7%	3.5%

Source: U/M/BBER Household Survey, 1995

The method of getting to an airport was virtually the same for all persons and for persons who were air transportation travelers, with the exception of the use of taxis. Travelers use of taxis was approximately three times greater than their use by all Montana residents going to airports (0.8 percent compared to 2.5 percent). This probably reflects the fact that business travelers use taxis more frequently than most Montana residents and business activity was a higher proportion of traveler activities than it was of the activities of all Montana residents.

The overall pattern which emerges is that the primary intermodal airport connections used by Montana residents are their private automobiles (UM/BBER Household Survey, 1995). Business, recreational and other travelers to the state use rental cars, taxis and, to a limited degree, busses. It is interesting to note that while few Montana residents use busses, shuttles or vans to get to/from airports (1.3 percent among all Montana residents and 0.7 percent among Montana resident travelers), private bus companies have found it economically viable to provide inter-city bus service at several of the state's commercial airports. From interviews with airport managers, it appears that this type of service is provided mainly during the summer and is primarily used by tourists coming to the state.

#### 2.4 OTHER MULTIMODAL AIRPORT LINKAGES

Table 10 presents the results of an airport multimodal inventory (UM/BBER Household Survey, 1995). Car rentals, hotel shuttles and taxis are the most prevalent inter-modal connections involving personal transportation. Equally prevalent is small package express service which interfaces air transportation with trucks for local deliveries. Busses and vans/minis are not widely reported. (UM/BBER Household Survey, 1995).

The UM/BBER Household Survey (1995) reported a total of almost 4,500 jobs and \$79.4 million of wages and salaries are generated at, or dependent upon, Montana airports in 1994. About 94 percent of the airport related employment and 97 percent of the airport related income occurred at Montana's seven commercial airports. Among the commercial airports, Great Falls (32 percent of employment and 35 percent of income) and Billings (20 percent of employment and 23 percent of income) accounted for over half of the total economic activity.

Other than employment and income associated with car rentals and the other transportation activities reported in Table 10, the employment was related to either air transportation services

at government agencies (U.S. Forest Service, FAA, INS, etc.) and involved few intermodal connections.

**Table 10**  
**Multimodal Connections At Montana Commercial Airports**

	car rental	taxi	charter bus	other bus	hotel shuttles	valet limo	package express
Billings	yes (4)	yes			yes		yes (3)
Bozeman	yes (4)	yes (2)	yes (3)		yes		yes (3)
Butte	yes (3)	yes			yes		yes (3)
Great Falls	yes (4)	yes		yes	yes		yes (3)
Helena	yes (3)	yes			yes		yes (3)
Kalispell	yes (4)	yes (2)			yes		yes (3)
Missoula	yes (4)	yes		yes	yes	yes	yes (3)

Source: TIM/BULK Household Survey, 1995

Note: Numbers in parentheses are the number of companies providing the service.

### **3.0 MULTIMODAL METHODS & STRATEGIES ANALYSIS**

This section presents a discussion of multimodal methods and strategies, including recommendations on methods and strategies to enhance multimodal activity at Montana airports.

#### **3.1 AIRPORT STRATIFICATION BY TYPE & NUMBER OF OPERATIONS**

Montana has over 125 public use airports. These airports can be categorized as [a] commercial airports, [b] Emergency Air Service (EAS) airports, [c] busy general aviation (GA) airports - defined as those reported to have over 8,000 operations a year, and [d] other GA airports. Table 11 shows the airports which fall into the first three categories.

**Table 11  
Montana Airports  
Categorized by Type of Airport**

<b>Type of Airport</b>	<b>Type of Ownership</b>	<b>Airport Name</b>	<b>Associated City</b>
Commercial Service	City	BERT MOONEY	Butte
Commercial Service	City	LOGAN INTERNATIONAL	Billings
Commercial Service	County	GALLATIN FIELD	Bozeman
Commercial Service	County	GLACIER PARK INTERNATIONAL	Kalispell
Commercial Service	City-County	GTF INTERNATIONAL	Great Falls
Commercial Service	City-County	HELENA REGIONAL AIRPORT	Helena
Commercial Service	City-County	MISSOULA	Missoula
Commercial Service	State	WEST YELLOWSTONE	
EAS Airports	City	FRANK WILEY FIELD	Miles City
EAS Airports	County	DAWSON COMMUNITY	Glendive
EAS Airports	County	HAVRE CITY-COUNTY AIRPORT	Havre
EAS Airports	City-County	WOKAL FIELD	Glasgow
EAS Airports	City-County	LEWISTOWN MUNICIPAL	Lewiston
EAS Airports	City-County	SIDNEY-RICHLAND MUNICIPAL	Sidney
EAS Airports	City-County	L. M. CLAYTON	Wolf Point
"Busy" General Aviation	City	KALISPELL CITY AIRPORT	Kalispell
"Busy" General Aviation	City	LAUREL MUNICIPAL	Laurel
"Busy" General Aviation	City	STEVENSVILLE	Stevensville
"Busy" General Aviation	County	ENNIS-BIG SKY AIRPORT	Ennis
"Busy" General Aviation	County	DILLON	Dillon
"Busy" General Aviation	County	RAVALLI COUNTY AIRPORT	Hamilton
"Busy" General Aviation	County	THREE FORKS	Three Forks
"Busy" General Aviation	County	TILLITT FIELD	Forsyth
"Busy" General Aviation	County	GARDINER	Gardiner
"Busy" General Aviation	City-County	EDGAR G. OBLE	Chinook
"Busy" General Aviation	City-County	LIBBY AIRPORT	Libby
"Busy" General Aviation	City-County	SHER-WOOD AIRPORT	Plentywood

Source: TLA

The first category contains the state's seven year-around commercial service airports plus West Yellowstone which is open between the months of June and September, and is owned and operated by the Montana Aeronautics Division, Montana Department of Transportation (MDT).

Commercial flights into West Yellowstone are exclusively from/to out-of-state origins/destinations and primarily serve out of state tourists going to Yellowstone National Park. The seven other commercial service airports have both interstate and intrastate commercial service.

The second category contains Montana's seven EAS airports. They are served by regional commuter airlines providing service to/from Logan International Airport in Billings. The third category contains the 12 airports in the state classified as "busy" GA airports and are reported to have over 8,000 operations a year. These airports have no commercial (carrier or commuter) service, but may have charter service.

There are almost 100 "other" GA airports in Montana, and they range in size from Red Lodge, Columbus and Polson airports which have 7,000 or more operations a year to Ross International, Tiber Dam and Whetstone International airports which have under 100 operations a year. Sixteen of these "other" GA airports are reported to have 5,000 or more operations a year; these are shown in Table 12.

**Table 12**  
**Montana "Other" GA Airports With 5,000 Or More Reported Operations**

Type of Airport	Type of Ownership	Airport Name	Associated City
"Other" General Aviation	City	COLUMBUS	Columbus
"Other" General Aviation	County	FERNDALE	Big Fork
"Other" General Aviation	County	WHITE SULFUR SPRINGS	White Sulfur Springs
"Other" General Aviation	County	BROADUS	Broadus
"Other" General Aviation	County	FAIRGROUNDS AIRPARK	Hardin
"Other" General Aviation	City-County	RED LODGE	Red Lodge
"Other" General Aviation	City-County	POLSON	Polson
"Other" General Aviation	City-County	SCOBEE	Scobey
"Other" General Aviation	City-County	BAKER	Baker
"Other" General Aviation	City-County	BIG TIMBER	Big Timber
"Other" General Aviation	City-County	BOWMAN	Anaconda
"Other" General Aviation	City-County	POPLAR	Poplar
"Other" General Aviation	City-County	CUT BANK	Cut Bank
"Other" General Aviation	City-County	FORT BENTON	Fort Benton
"Other" General Aviation	City-County	BIG SANDY	Big Sandy
"Other" General Aviation	City-County	SHELBY	Shelby

Source: TLA

The UM/BBER conducted a mail (with telephone follow-up) -general aviation airport managers survey using the 12 "busy" GA airports and the 16 "other" GA airports with 5,000 or more reported operations as a sample. Four of the 12 "busy" GA airport managers and three of the 16 "other" GA airport managers responded. (UM/BBER Airport Managers Survey, 1995).

### 3.2 INTERMODAL SERVICES BY AIRPORT TYPE & NUMBER OF OPERATIONS

The different types intermodal connections at Montana airports are summarized in Table 13.

**Table 13**  
**Intermodal Interfaces Used at Different Types of Airports**

Methods/Strategies to Enhance Intermodal Interfaces	Commercial Service Airports	EAS Commercial Service Airports	Busy General Aviation Airports	Other General Aviation Airports
Car Rental	8	5	4	2
City Bus	1	0	0	0
InterCity Bus	3	0	0	0
Van/Limo	7	0	0	0
Taxi	8	5	3	1
Courtesy Car	0	4	6	2
Total Possible Airports	8	7	12	16

Source: TLA and UM/BBER Airport Managers Survey (1995)

All eight of the commercial service airports and five of the seven EAS commercial service airports provide car rentals and taxi facilities. Seven of the eight commercial service airports also provide for-hire van/limo services, but this type of intermodal interface is not provided at any of the EAS commercial service airports. Among the eight commercial service airports, one has city bus service and three have intercity bus service, while none offer the use of a courtesy car. Among the seven EAS commercial service airports, none have any type of bus service but four of the seven offer courtesy cars.

None of the GA airports offer any type of bus or for-hire van/limo service. Among the 12 "busy" GA airports, four offer car rentals, three have taxi facilities, and six provide courtesy cars. Among the 16 "other" GA airports that reported 5,000 or more operations, two have car rentals, one has a taxi facility and two offer courtesy cars.

All of the commercial EAS and GA airports have hotel shuttles and taxis which respond to telephone requests. These intermodal services are provided by the hotels and taxi companies in the same fee-for-service manner that they provide service to all local residents and travelers. These types of intermodal connections are not analyzed as services provided to travelers by the state's airports.

Table 14 presents the intermodal service linkages existing at each of the state's commercial service airports. All offer car rentals and all have facilities for taxi queuing. All except West Yellowstone have for-hire van/limo service. The Missoula city bus goes along the highway in front of the airport. It will go up to the terminal if requested, but the airport is not on its scheduled route. None of the other commercial service airports have links to city bus systems. The airports at Bozeman, Great Falls and Missoula are served by one or more of the state's intercity bus/stage companies. The Helena Regional Airport was reported to have a terminal access road that will not accommodate large busses. The other commercial service airports, although they do not have intercity bus service, do not appear to have any structural impediments to large busses.

**Table 14**  
**Intermodal Linkages at Montana's Commercial Service Airports**

Airport Name	Location	Intermodal Transportation Linkages					
		Car Rental	City Bus	Inter City Bus	Limo	Taxi	Courtesy Car
BERT MOONEY	BUTTE	Yes			Yes	Yes	
LOGAN INTERNATIONAL	BILLINGS	Yes			Yes	Yes	
GALLATIN FIELD	BOZEMAN	Yes		Yes	Yes	Yes	
GLACIER PARK INTERNATIONAL	KALISPELL	Yes			Yes	Yes	
GTF INTERNATIONAL	GREAT FALLS	Yes		Yes	Yes	Yes	
HELENA REGIONAL AIRPORT	HELENA	Yes			Yes	Yes	
MISSOULA	MISSOULA	Yes	Yes	Yes	Yes	Yes	
WEST YELLOWSTONE	W. YELLOWSTONE	Yes				Yes	

Source: TTA and TMT/THIR Airport Managers Survey, 1993

Table 15 presents the intermodal service linkages existing at each of the state's EAS commercial service airports. None of the seven EAS commercial service airports have city bus, intercity bus or for-hire van/limo service available. The airports at Miles City, Glendive, Glasgow, Sidney

and Wolf Point have car rental available, while the airports at Havre and Lewistown do not. Miles City, Glendive, Glasgow, Lewistown and Sidney have taxi services available, while the airports at Havre and Wolf Point do not. Among the seven EAS commercial service airports, courtesy cars are available at the following four airports: Dawson Community (Glendive), Havre City-County (Havre), Lewistown and Sidney-Richland Municipal (Sidney).

**Table 15**  
**Intermodal Linkages at Montana's EAS Commercial Service Airports**

Airport Name	Location	Intermodal Transportation Linkages					
		Car Rental	City Bus	Inter City Bus	Limo	Taxi	Courtesy Car
FRANK WILEY FIELD	MILES CITY	Yes				Yes	
DAWSON COMMUNITY	GLENDDIVE	Yes				Yes	Yes
HAVRE CITY-COUNTY AIRPORT	HAVRE						Yes
WOKAL FIELD	GLASGOW	Yes				Yes	
LEWISTOWN	LEWISTOWN					Yes	Yes
SIDNEY-RICHLAND MUNICIPAL	SIDNEY	Yes				Yes	Yes
WOLF POINT	WOLF POINT	Yes					

Source: TLA and UMBBER Airport Managers Survey, 1993

Table 16 presents the intermodal service linkages existing at each of Montana's busy GA airports. Two of the state's 12 busy GA airports, Stevensville and Big Sky (located at Ennis) have no intermodal linkages other than the use of some type of private, personal vehicle. Five other airports (Laurel, Three Forks, Gardiner, Edgar G. Obie (located at Chinook) and Libby) offer courtesy cars but do not have commercial intermodal transportation linkages. Kalispell City Airport - the busiest GA airport in the state with over 35 thousand operations - and Ravalli County Airport - the second busiest GA airport in Montana with over 18 thousand operations - both have car rental facilities, as do the smaller airports at Forsyth (Tillitt Field) and Plentywood (Sher-Wood Airport). Taxi facilities are available at Kalispell City, Dillon and Sher-Wood Airports.

Table 17 presents the intermodal service linkages at each of Montana's 16 "other GA airports" sampled. Three of the 16 other GA airports - Red Lodge, Fairgrounds Airpark (located at Hardin) and Cut Bank have car rental services. Red Lodge also has taxi facilities. Baker and

**Table 16**  
**Intermodal Linkages at Montana's Busy GA Airports**

Airport Name	Location	Intermodal Transportation Linkages					
		Car Rental	City Bus	Inter City Bus	Limo	Taxi	Courtesy Car
KALISPELL CITY AIRPORT	KALISPELL	Yes				Yes	
LAUREL	LAUREL						Yes
STEVENSVILLE	STEVENSVILLE						
BIG SKY (ENNIS) AIRPORT	ENNIS						
DILLON	DILLON					Yes	
RAVALLI CO. AIRPORT	HAMILTON	Yes					
THREE FORKS	THREE FORKS						Yes
TILLITT FIELD	FORSYTH	Yes					Yes
GARDINER	GARDINER						Yes
EDGAR G. OBIE	CHINOOK						Yes
LIBBY AIRPORT	LIBBY						Yes
SHERWOOD AIRPORT	PLENTYWOOD	Yes				Yes	

Source: TLA and UMBLER Airport Managers Survey, 1995

**Table 17**  
**Intermodal Linkages at Montana's Other GA Airports**

Airport Name	Location	Intermodal Transportation Linkages					
		Car Rental	City Bus	Inter City Bus	Limo	Taxi	Courtesy Car
RED LODGE	RED LODGE	Yes				Yes	
COLUMBUS	COLUMBUS						
POLSON	POLSON						
SCOBEE	SCOBEE						
BAKER	BAKER						Yes
FERNDALE	BIG FORK						
BIG TIMBER	BIG TIMBER						
FAIRGROUNDS AIRPARK	HARDIN	Yes					
BOWMAN	ANACONDA						
POPLAR	POPLAR						
CUT BANK	CUT BANK	Yes					
FORT BENTON	FORT BENTON						
BIG SANDY	BIG SANDY						
BROADUS	BROADUS						Yes
SHELBY	SHELBY						
WHITE SULFUR SPRINGS	WHITE SULFUR SPRINGS						

Source: TLA and UMBLER Airport Managers Survey (1995)

Airport managers were asked whether or not local residents would use multimodal recreational facilities (such as trails for jogging, bicycling, snowmobiling, or cross country skiing) if they were available (UM/BBER Airport Managers Survey, 1995). Three of the four "Busy" GA airport managers that responded felt there was no local interest, and the fourth responded that he did not know if any interest existed. Among the three "Other" GA airports reporting 5,000 or more operations, one responded there was no interest, one responded there was very likely interest in jogging and bicycle trails, and the third responded there was some interest in snowmobile and cross-country ski trails.

### 3.3 Analysis of Multimodal Methods and Strategies

The most prevalent airport intermodal connection used in Montana is private, personally owned automobile transportation. Over 91 percent of persons who went to airports in the state said they used their own automobiles to get there. (UM/BBER Household Survey, 1995). Reflecting the prevalence of private automobile transportation, all of the state's commercial service airports, excluding West Yellowstone, provide adequate parking for personally owned cars.

Montana residents overwhelmingly use their own cars for travel within the state. Four out of five Montana households (83 percent) took an in-state trip of 100 miles or more during the prior 12 months. Two thirds (68 percent) of these trips were for pleasure, and just under one third (28 percent) for business. Over 92 percent of these in-state travelers said they used their own cars, and 99 percent said they would not have used air transportation even if suitable direct or connecting service had been available. (UM/BBER Household Survey, 1995).

Fewer than one percent of Montana's households use taxis, buses or shuttle vans to go to/from an airport. (UM/BBER Household Survey, 1995). These types of multimodal airport connections cater primarily to out-of-state visitors to Montana. The same is true for the car rental companies located at the commercial service airport.

Inter-city bus service catering primarily to recreational travelers visiting Montana's state and national park lands is available at three of the commercial airports. The terminal access road at Helena (which does not currently have bus service) will have to be modified if busses are to be accommodated.

There is little demand for local bus service in Montana's urban areas and little is supplied. This is reflected in the general lack of local bus connections at airports.

Among Montana's seven EAS airports, Havre City-County Airport has no for-hire intermodal connections available, the airport does however have a courtesy car. Lewistown Airport has taxi facilities but no car rental services; and Wolf Point Airport has no taxi facilities but does have a car rental company at the terminal.

Of the 12 busy GA airports in Montana, only five had any type of for-hire multimodal transportation available. Six had courtesy cars. One had no type of intermodal transportation service (except for a parking area for private automobiles).

Among the 16 "other" GA airports which reported 5,000 or more operations, the availability of intermodal transportation connections was the exception rather than the rule. Only three of the airports had car rental services, one had taxi facilities and two had courtesy cars available.

### 3.4 Conclusions

These findings give rise to the following conclusions regarding multimodal connections at Montana airports.

- (a) Montana residents overwhelmingly use their own cars for within state travel, including travel to and from airports. As a result, the primary multimodal airport facilities provided for, and used by, Montana residents are automobile parking areas.
- (b) With the exception of West Yellowstone, all the commercial service airports have car rental, van/limo and taxi facilities; and three of the eight commercial service airports provide some type of inter-city bus service.

Although there were no survey based data on the use of multimodal facilities by out-of-state visitors, information obtained from interviews with airport managers and airline staffs indicate that the demand for taxis and car rentals is mainly generated by business/ government travelers while intercity bus and van/limo service is primarily demanded by tourists coming to Montana to visit its National Parks and Monuments.

government travelers while intercity bus and van/limo service is primarily demanded by tourists coming to Montana to visit its National Parks and Monuments.

- (c) There were no survey data available on either in-state or out-of-state passenger travel patterns at Montana's seven EAS airports. However given the pattern of private auto use by Montana residents, rental car and taxi use by out-of-state business/government travelers, and van/limo and intercity bus use by tourists discussed above, it appears that relatively few tourists use these airports. All have some type of automobile parking facility (local travelers) and either taxi or car rental facilities (out-of-state business/government travelers) but none have intercity bus or van/limo facilities (tourists).
- (d) Although very few survey questionnaires were returned by GA airport managers, the ones that were returned reported that somewhere between 95 and 100 percent of all GA airport users reached the airport by private automobile.
- (e) When GA airports were stratified by the ratio of local to transient operations, there was some indication that commercial multimodal facilities occur more frequently at airports that have a higher proportion of fly-in visitors. For example, among the state's "busy" GA airports, there were three (Dillon, Gardiner and Kalispell City) where the ratio of local to local plus itinerant operations was less than half (0.5). Two of these three airports had some type of commercial intermodal facilities. Two of the "busy" GA airports had a local operations ratio of two thirds (0.65) or more and neither had any commercial multimodal facilities. A similar pattern was true for the "other" GA airports that reported 5,000 or more annual operations. Seven of these airports had a local operations ratio of less than half and two of them had some type of commercial multimodal facilities. Seven additional airports had a local operations ratio of two thirds or higher and none had any commercial multimodal facilities.

### 3.5 RECOMMENDATIONS

Recommendations for improving the efficiency of multimodal transportation linkages at Montana airports are of necessity limited and general. Multimodal linkages such as car rentals, taxis and intercity busses are mainly used by out-of-state travelers. There were no survey data on these travelers, and relatively little can be said about their travel requirements other than some

general information gathered during visits to selected Montana airports and interviews with airport managers.

- ◆ An inventory of access roads at the state's seven commercial service airports should be conducted to assure that the airport terminals can be reached by inter-city and tour buses.
- ◆ Commercial airports should be encouraged to determine the market viability of entering into agreements with one or more inter-city bus companies to provide, at a minimum, tour bus service during the peak visitor months of June through September.
- ◆ Notwithstanding the uncertainty surrounding the state's EAS airports, the market feasibility for car rental services at the Havre and Lewistown EAS airports and for taxi facilities at Havre and Wolf Point airports should be determined; and if feasible, these airports should develop the necessary facilities and enter into agreements with private transportation operators to provide such services.
- ◆ For those EAS airports which experience significant recreational summer passenger peaks, the feasibility of establishing summer inter-city/tour bus service should be investigated. This could be done by distributing a simple questionnaire to all departing travelers while they are in the airport waiting areas asking about their origins, destinations and transportation preferences. The sample survey information would then be reviewed with private operators of inter-city/tour bus services to see if they think the market is sufficient to warrant commercial service.
- ◆ Intermodal connections at both Montana's busy and other GA airports appears to be largely market driven and determined mostly by each airport's number of itinerant operations and based aircraft. Montana Aeronautics Division, MDT, should consider sponsoring a multimodal planning conference for GA airport managers to assist them in preparing to take advantage of possible intermodal linkage opportunities that may arise.
- ◆ Finally, consideration should be given to developing recreational multimodal facilities at some of Montana's "other" GA airports. Only three "other" GA airport managers responded to the UM/BBER survey, but two of the three responded that local residents would likely use recreational jogging, bicycling or cross country ski trails if they were developed. (UM/BBER Airport Managers Survey, 1995). A prototype recreational

multimodal development program could be developed by Montana Aeronautics Division, MDT, at those airports where the managers indicated there was local interest. Montana Aeronautics Division, MDT should work with Fairview Airport, Sidney, to develop bicycle and walking/jogging trails and with Ronan Airport, Polson, to develop cross country ski trails. If these prototypes prove successful and are both used and supported by local residents, similar facilities could be developed at other GA airports where airport managers feel that local residents would use the facilities.

#### **4.0 MULTIMODAL EFFICIENCY ANALYSIS**

This section conducts a multimodal efficiency analysis and evaluates the potential benefits that would result from increased multimodalism at GA airports on the part of Montana residents.

##### **4.1 POTENTIAL DIRECT BENEFITS**

FAA document DOT/FAA/PP-92-6, *Estimating the Regional Significance of Airports*, (Butler and Kiernan, 1992) defines the primary benefits of an airport as "the time saved and cost avoided by travelers who use it over the next best alternative." (Butler and Kiernan, 1992, page 5) This definition is used as the basis for estimating potential direct benefits of increased multimodal airport use by Montana residents.

Approximately 92 percent of Montana residents who took an in-state trip of 100 miles or more during the prior 12 months used their own automobiles. (UM/BBER, Household Survey, 1995) The average urban Montana resident lived eight miles from an airport and ten miles from an airport with scheduled commercial service, while the average rural resident lived 12 miles from an airport and 53 miles from an airport with scheduled commercial service. (UM/BBER, Household Survey, 1995) Finally, 99 percent of the persons who had taken an intrastate trip of 100 miles or more during the prior 12 months said they would not have used air service even if direct or suitable connecting service had been available. (UM/BBER, Household Survey, 1995).

This information leads to the conclusions (a) that Montana residents primarily use air transportation for out-of-state trips, (b) the choice faced by the average urban resident between

an eight mile trip to the nearest airport or a 12 mile trip to the nearest airport with scheduled commercial service is a difference of less than six minutes of driving (at 45 miles an hour) and this is too small a potential saving to cause anyone to change their choice of transportation mode, and (c) the 41 mile difference between the average rural resident's 12 miles to the nearest airport and 53 miles to the nearest airport with scheduled air service represents the potential for generating direct efficiency benefits from multimodal travel at the state's GA airports. These direct efficiency benefits would result from the difference in the time it takes a rural interstate traveler to drive to the airport nearest his/her place of residence and to the nearest commercial service airport.

DOT/FAA/PP-92-6 (Butler and Kieman, 1992) contains benefit tables for airports (a) with and without commercial operations, (b) with different based aircraft levels, and (c) with different reductions in the distance traveled to the nearest airport. (Appendix 3)

In the sample of 12 "busy" GA airports and 15 "other" GA airports reporting 5,000 or more annual operations, (a) none had commercial operation, (b) there was an average of 22 based aircraft, or 18 if Hamilton, Kalispell City and Stevensville airports (the only three with 40 or more based aircraft) are omitted, and (c) the average potential reduction in distance traveled is taken to be the same as the average for all rural GA airports in the state - 41 miles. From the table in Appendix 3, an airport with no commercial service, 20 based aircraft and a reduction in distance to airport of 20 miles has \$246,600 in total annual benefits. The reduction in distance traveled for the average GA airport in Montana was 41 miles. The ratio of the reduction in distance traveled for the average GA airport in Montana divided by the reduction shown in the table (or, 41 divided by 20) multiplied by the total annual benefits shown in the table (\$246,600) gives the annual direct time saving (efficiency) benefit per airport that would result from rural Montana residents driving to their nearest GA airport and taking an air taxi or scheduled commuter when taking an out-of-state trip instead of driving an average of 53 miles to the nearest commercial service airport. The dollar value of this time saving (efficiency) benefit is \$503,480.

As discussed earlier (Section 2.1, page 4, first paragraph), an estimated 505 thousand commercial aircraft enplanements were generated by Montana residents during 1994. Rural residents accounted for 91.8 thousand (18.2 percent) of these enplanements. (UM/BBER

Household Survey, 1995). Also, approximately 28.4 percent of air transportation travelers traveled primarily for business. (UM/BBER Household Survey, 1995). Applying the 28.4 percentage for business travelers to the 505 thousand total rural commercial air transportation travelers gives an estimate of 26.1 thousand rural business travelers using commercial air transportation services.

About a quarter (23.5 percent) of Montana's business travelers reported traveling for both business and pleasure, and most of these travelers would use their own cars, according to survey responses regarding how pleasure travelers prefer to travel. Other rural business travelers are driven the average 53 miles to the closest commercial service airport by family or friends, and most would not use connecting air taxi or scheduled commuter service even if it were available. The most probable estimate of the proportion of rural business travelers that might use air taxi or scheduled commuter service from a close GA airport, therefore, is in the range of 50 to 75 percent. If the lower (50 percent) end of the range is used, the estimated number of rural business travelers is 13.1 thousand and the benefits per traveler would be about \$39 (calculated as follows: the dollar value of the efficiency benefit of \$503,480 is divided by 50 percent of the 26,100 business travelers, or  $[\$503,480 \div (0.5 \times 26,100)] = [\$503,480 \div 13,050] = \$38.58$ ). If the upper (75 percent) end of the range is used, the estimated number of rural business travelers is 19.6 thousand and the benefits per traveler would be about \$26 (calculated as follows: the dollar value of the efficiency benefit of \$503,480 is divided by 75 percent of the 26,100 business travelers, or  $[\$503,480 \div (.75 \times 26,100)] = [\$503,480 \div 19,575] = \$25.72$ ).

About 24 percent of Montana residents would be willing to pay \$25 or more to fly rather than use an alternative mode of transportation, while only about 15 percent would be willing to pay \$50 or more. An additional 43 percent did not know how much they would be willing to pay. (UM/BBER Household Survey, 1995). While hard data do not exist about the average cost <sup>(b)</sup> per trip that a commercial air taxi or scheduled commuter operator in Montana would have to charge per "average" trip from a feeder GA airport to a commercial service airport, reported data about the costs of EAS operations and opinions expressed during interviews with airport personnel at selected Montana airports make it unlikely that round trip fares for commuter service would be in the range of \$26 to \$39 -- the average value of the service to a Montana resident.

The conclusion which emerges from the above analysis, therefore, is that although significant time saving (efficiency) benefits would be derived from increased multimodalism at Montana's CJA airports, the dollar value of these benefits is not large enough to support a market driven, privately operated, air transportation system at the present time.

## Appendix 1

### Quarterly Enplanements at Montana's Commercial Service Airports

**Quarterly & Annual Enplanements at Montana's Six Commercial Service Airports**

	Billings	Bozeman	Butte	Great Falls	Helena	Kalispell	Missoula
<b>1Qtr 1991</b>	61,402	36,597	6,559	23,269	11,271	13,929	24,860
<b>2Qtr 1991</b>	65,061	27,648	8,059	28,953	12,898	15,460	33,507
<b>3Qtr 1991</b>	85,739	46,738	10,604	39,692	16,068	31,723	46,788
<b>4Qtr 1991</b>	69,084	30,665	8,514	31,108	13,801	15,520	36,789
<b>Annual Total</b>	<b>271,286</b>	<b>141,689</b>	<b>33,736</b>	<b>123,018</b>	<b>53,939</b>	<b>76,652</b>	<b>141,944</b>
<b>1Qtr 1992</b>	56,903	39,556	6,634	23,874	11,945	16,010	28,340
<b>2Qtr 1992</b>	70,550	29,401	7,707	28,755	13,819	17,117	32,824
<b>3Qtr 1992</b>	104,943	53,155	11,551	45,724	17,234	35,786	55,324
<b>4Qtr 1992</b>	72,265	31,866	9,408	31,759	14,320	15,038	36,838
<b>Annual Total</b>	<b>303,661</b>	<b>152,978</b>	<b>35,550</b>	<b>130,212</b>	<b>57,118</b>	<b>83,953</b>	<b>163,327</b>
<b>1Qtr 1993</b>	59,156	44,884	7,546	23,956	12,450	17,683	30,330
<b>2Qtr 1993</b>	73,825	34,594	8,757	28,295	13,239	18,128	39,772
<b>3Qtr 1993</b>	97,096	58,269	11,357	40,918	16,282	35,247	54,354
<b>4Qtr 1993</b>	73,979	36,509	9,082	28,205	14,205	16,432	40,696
<b>Annual Total</b>	<b>303,855</b>	<b>174,256</b>	<b>36,742</b>	<b>122,378</b>	<b>56,176</b>	<b>89,490</b>	<b>165,154</b>
<b>1Qtr94</b>	61,866	45,633	7,848	23,510	12,971	18,941	31,899
<b>2Qtr94</b>	73,762	31,878	9,331	26,097	14,633	20,398	36,256
<b>3Qtr94</b>	94,551	56,261	12,180	37,141	17,601	41,226	53,864
<b>4Qtr94</b>	78,314	38,929	9,091	33,068	15,306	21,151	43,073
<b>Annual Total</b>	<b>308,493</b>	<b>172,502</b>	<b>38,450</b>	<b>119,806</b>	<b>60,813</b>	<b>101,715</b>	<b>165,091</b>

Source: TLA, from data provided by Graham, 1995

## Appendix 2

### Stratification & Selected Statistics for Montana Airports





Type of Airport	Type of Ownership	Airport Name	Locations		NUMBER OF OPERATIONS PER YEAR						AIRPORT SERVICES		INTERMEDIATE TRANSPORTATION SERVICES					
			County	City/Town	Total	General	Air Taxi & Ch.	Military	Fed	Require	Car Rental	City Bus	Limo	Taxi	Rental Car			
Other General Aviation	Private	LEWISTON	CLATSOP	LEWISTON	632	604	0	0	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	HERBERTMAN AIRPORT	CLATSOP	CLATSOP	335	0	0	323	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	500	0	0	0	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	140	0	0	140	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,322	0	0	1,322	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	4,350	0	0	4,350	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	600	0	0	600	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	3,000	0	0	3,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0	0	0	0	0	0	0	
Other General Aviation	Private	ST. LAURENCE AIRPORT	WASHINGTON	ASHLAND	1,000	0	0	1,000	0	0	0							

NOTE: Descriptive data for 1993 and/or 1994

Sources: Mortgage Auditing Division, *Absentee Job Directory* (MADOT), 1994; THE WHITE ALPINE Survey, 1995; F.A.A. 9110 Report;

## Appendix 3

### FAA Approximate Benefits for Various Airport Activity Levels

### Approximate Benefits for Various Airport Activity Levels

Based Aircraft	Annual Commercial Passengers <sup>1</sup>	Reduction in Distance to Airport <sup>2</sup>	Value of Time Saved	Reduction in Travel Cost	Total Annual Benefits
10	0	20	\$99,900	\$23,400	\$123,300
20	0	20	\$199,800	\$46,800	\$246,600
50	0	20	\$499,500	\$117,000	\$616,500
100	0	20	\$999,000	\$234,000	\$1,233,000
50	50,000	20	\$1,165,500	\$507,000	\$1,672,500
100	100,000	20	\$2,331,100	\$1,014,000	\$3,345,100
100	1,000,000	20	\$14,319,000	\$8,034,000	\$22,353,000

<sup>1</sup> Includes only origin and destination traffic; does not include through or transfer passengers

<sup>2</sup> Highway mileage measured from the point where trips begin or end, typically the traveler's residence or place of business

Source: Butler and Kiernan, 1992, page 10.

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